

Remarks

The outstanding Official Action has been reviewed. It is respectfully urged that the outstanding Official Action is not appropriately made a final action. In the preceding Official Action, the examiner indicated the presence of allowable subject matter in claims 9 and 12, provided those claims were rewritten in independent form. It was indicated that provided those claims were rewritten in independent form they would be allowable. Claims 9 and 12 were written in independent form incorporating all of the subject matter of the claims from which they were dependent. Nevertheless, those claims were rejected over the Ahissar patent that was previously relied upon in the prior Official Action. It is respectfully urged that the new grounds for rejection did not arise from amendments made to the claims, and the final nature of the outstanding Official Action should be withdrawn.

The examiner's allowance of claims 2 - 8 and 31 - 33 is gratefully acknowledged.

In paragraph 3, page 2 of the Official Action, it is not clear what is meant by the statement "Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning." Clarification is requested of "broad in concept" and explicit or implicit in meaning.

In paragraph 4 of the Official Action, page 2, it is not understood what is meant by the comments "To one of ordinary skill in the art, simulation of neural networks by whatever means is well established in the art," and "Merely coupling signals together without defining how the signal was developed begs for prior art." Clarification of these expressions is requested. Moreover, to the extent that the statement "To one of ordinary skill in the art...by whatever means is well established in the art" means that there is no possibility for patentable subject matter in the development of neural networks, this position is respectfully traversed. It is believed that the present application and in particular the claims now present clearly define patentable subject matter in this art and that their content is not well established in the "well established in the art." The examiner has, in fact, recognized patentability in the neural networks of this application in indicating allowance of a number of the claims.

The examiner's objection to claim 26 at paragraph 7 of the outstanding Official Action, page 3, is respectfully traversed. There it is said that claim 26 is "of improper dependent form for failing to further limit the subject matter of a previous claim." Claim 26 specifies that the gain of parent claim 25 is accomplished using an amplifier and that the phase shift of parent claim 25 is accomplished with a phase shift circuit. Claim 25 does not call for an amplifier or a phase shift circuit. Hence claim 26 more narrowly defines the subject of claim 25 and is a proper dependent claim.

Claims 13 - 16, 27, 29 and 30 are observed to contain patentable subject matter in the outstanding Official Action. Claim 13 has been rewritten in independent form and should be now allowable. Claims 14 - 16 are dependent and allowable with claim 13.

Claim 27, dependent from claims 26 and 25 has not been rewritten in dependent form. Claim 25 is rejected solely for its use of the word "substantially." For the reasons expressed below, it is urged that claim 25 is in proper form and is allowable. Similarly, claim 26, rejected based on its inclusion of "substantially" by its dependence, and also objected to, as noted above, is an appropriate dependent claim for the reasons given above and for the subsequent discussion of the word "substantially." Consequently, claim 27 is believed allowable as presented and does not require rewriting in independent form.

Concerning the rejection of claims 25, 26 and 28 as indefinite based on their use of the term "substantially" this rejection is respectfully traversed. At Section 2173.05(b), the Manual of Patent Examining Procedure points out that the expression "substantially" has been held not to be indefinite when used in very much the same way as here. Citing *In re Mattison*, 509 F2d 563, 184 USPQ 484 (CCPA 1975). There, "which produces substantially equal E and H plane illumination patterns" was held to be definite. "Substantially" is regularly used in patent claims without objection.

Claims 29 and 30 are dependent from claim 28. Claim 28 is rejected solely on its use of the word "substantially" and based on 35 U.S.C. § 112. For the reasons stated below it is urged that claim 28 is an appropriate claim and that therefore claims 29 and 30 do not need to be rewritten in independent form.

Concerning the examiner's rejection of claim 1 as anticipated by Ahissar, the examiner indicates that Ahissar in the abstract, in Fig. 3A, and at column 24, lines 32 - 35 indicate a phase-based connection strength in a weighting network. This is not the case. Nothing in Ahissar suggests such. Likewise, there is no suggestion of a phase-locked loop circuit operably coupled with a weighting network in the Ahissar patent at column 1, lines 13 - 38 nor does Ahissar at column 5 lines 14 - 26 suggest a weighting network having inputs operably coupled to outputs of the phase-locked loops and having outputs operably coupled to inputs of phase-locked loops at all. The examiner has not responded to applicants' explanation that unlike Ahissar, applicants' phase-locked loops are a part of the neural network and the inputs operably coupled to outputs of the phase-locked loops and outputs operably coupled to inputs of the phase-locked loops implicitly clarifies that the weighting network of claim 1 is "outside of the phase-locked loops, and not a part of the phase-locked loops as in Ahissar's Fig. 3A.

The examiner's comment at page 5, "Claim 1 simply does not have the specific limitations (broader) discussed above" is not understood. Clarification is requested. To the extent that the examiner means to say that claim 1 does not expressly state that the weighting network exists outside of the phase-locked loops, it should be noted that new claim 34 is like claim 1 but makes explicit that limitation which was implicit in claim 1. It expressly sets forth that the weighting network is external to the phase-locked loops. Nevertheless, claim 1 patentably differs from Ahissar in its interconnection of the weighting network inputs and outputs with the phase-locked loops. Ahissar expresses no such arrangement. The examiner states "To one of ordinary skill in the art, it is axiomatic that all neural networks have 'weighting networks.'" It is requested that the examiner provide support for that statement. Nevertheless, the specific arrangement set forth in claim 1 is not taught or suggested in Ahissar and claim 1 should be allowed at this time.

Concerning claim 9, again the cited provisions of Ahissar, the abstract, Fig. 3A, column 24, lines 32 - 35, do not support the examiner's statement that Ahissar anticipates a weighting network having phase-based connection strengths. Ahissar, column 1 lines 13 - 38 does not suggest a plurality of phase-locked loop circuits operably coupled with said weighting network as is stated in the outstanding Official Action. Moreover, Ahissar, at column 1 lines 13 - 38 does not provide a network comprising a plurality of phase shift circuits each phase shift circuit

connected in a weighting circuit operably connected to an input of the phase-locked loops as is stated in the Official Action at page 10.

Regarding the examiner's response to the discussion of claim 9 in the previous amendment, that there is "nothing in claim 9 concerning the term "external," the express interconnection of the phase-locked loop and weighting elements inherently requires that the weighting element not be a part of the phase-locked loop, but connected to it. Nevertheless, to the extent that the examiner believes it is necessary to expressly state that the weighting elements are external of the phase-locked loop, new claim 35 is like claim 9 but expressly calls for that relationship.

Concerning the examiner's comment at page 5 that "all neural networks have weighting networks," it is requested that support be provided for that conclusion. Certainly nothing in the Ahissar patent supports that statement. However in view of the foregoing comment it is respectfully urged that both claims 9 and 35 are patentable over Ahissar and all art of record.

Regarding claim 10, this claim is dependent from claim 1 and is patentable with claim 1. Furthermore, the examiner's comment at page 10 of the outstanding Official Action that "Ahissar anticipates the weighting circuit further concludes a plurality of initial realization input terminals," citing Ahissar Fig. 3A, to the extent that applicants can understand what is intended, this is not the case. Clarification of this comment is asked. Nothing in Fig. 3A suggests the plurality of initialization input terminals as set forth in claim 10.

Regarding claim 11, applicants respectfully urge that Ahissar, in the abstract, at Fig. 3A, and in column 24 at lines 32 - 35, does not describe connectors having a phase-coded connection coefficient. Likewise applicants take issue with the examiner's assertion that Ahissar at Fig. 3A describes phase-locked loops having a plurality of oscillators operably coupled with said plurality of connectors, each of the connectors having means for establishing a gain. Without a clear teaching of the content of claim 11, this claim is patentable over Ahissar.

Regarding claim 12, the applicants disagree with the characterization of Ahissar at page 11. Nothing in the abstract, Fig. 3A, column 24 lines 32 - 35 suggests the phase-encoded connection coefficients, and nothing in Fig. 3A suggests the interconnection of the oscillators and adder circuits as set forth in the claim. Ahissar, column 6 lines 36 - 44 does not call for a plurality of adder circuits coupled between the plurality of connectors and said plurality of

oscillators as stated in the Official Action. Claim 12, it is urged, is clearly patentable over the Ahissar patent.

Regarding claim 17, again the Ahissar patent, at the portion cited by the examiner, does not set forth the phase encoded connection coefficient or the interconnections set out in the claim. Also regarding the examiner's statement at page 6, in connection with claim 18, that "To one of ordinary skill in the art, Ahissar's 'A Neuronal Phase-Locked Loop' functions this way," is without support in Ahissar or any art of record. It is respectfully requested that this conclusory statement be supported in the art.

Claim 19 is dependent from claim 18 and is, it is urged, patentable with claim 18. Again the portion of Ahissar, column 1 lines 9 - 12, cited by the examiner in regard to the content of claim 19, in fact says nothing about a phase deviation between signals representing a learned pattern and signals representing the incoming pattern to create an output signal indicative of the learned pattern.

Concerning claim 20, applicants take exception to the examiner's statement, at page 7 of the Official Action, that "phase relationships as the learning mechanism is well established in Ahissar." Likewise the Ahissar patent at column 1, lines 9 - 12, does not suggest "encoding connection coefficients ... in accordance with phase relationships" as claimed. It is respectfully urged that there is nothing in the Ahissar patent to suggest the encoding connection coefficients of claim 20 with phase relationships of signals representing a pattern to be learned. Claim 20, it is urged, is clearly patentable over the Ahissar patent. Again, it is respectfully urged that column 1, lines 9 - 12, does not support the provisions for which it is cited in regard to claim 20.

Claims 21 - 24 are dependent claims that incorporate the subject matter of claim 18 and consequently are patentable with claim 18. Insofar as the outstanding Official Action refers to provisions of the Ahissar patents to teach or suggest the provisions of claim 21 - 24, the statements in the Official Action at pages 12 - 13 are respectfully traversed. These claims like their parent are allowable over the art of record.

With all of the above, it is respectfully urged that all of the claims in this application are patentable over the art of record and early reconsideration to that end is respectfully requested. A concurrently filed Request for Continued Examination and a further Information Disclosure

Statement provide additional art that applicants believe should be considered and made of record in this application.

Respectfully submitted,

GALLAGHER & KENNEDY, P.A.

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By

A handwritten signature in black ink, appearing to read 'T D MacBlain', written over a horizontal line.

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